2.5 and 2.6

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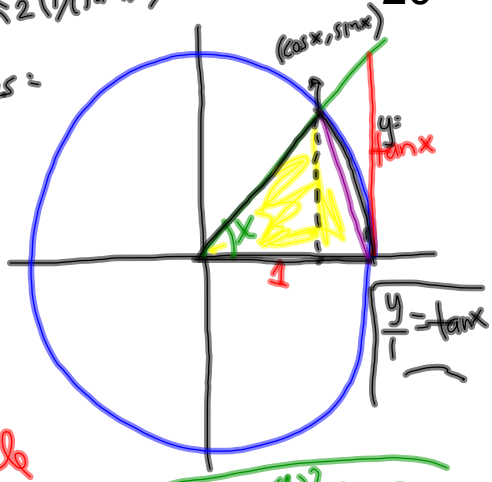
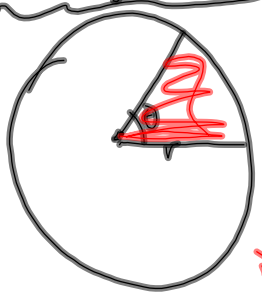
$\lim_{x\to 0}\frac{\sin x}{x}=1$

$\frac{1}{2}(1)(\sin x)\le\frac{x}{2}\le\frac{1}{2}(1)(\tan x)$

Area of triangles = $\frac{1}{2}bh$



Area of a sector



Area of entire circle $=\pi r^2$

Radian measure of an entire circle $=2\pi$

$S=\frac{(1)^2\theta}{2}=\frac{\theta}{2}$

Area of sector $=S$

Radian measure of sector $=\theta$

Area: radian $\frac{S}{\theta}=\frac{\pi r^2}{2\pi}$

Area of a sector, $S=\frac{r^2\theta}{2}$

$\frac{1}{2}(1)(\sin x)\le\frac{x}{2}\le\frac{1}{2}(1)(\tan x)$

$\frac{\sin x}{\sin x}\le\frac{x}{\sin x}\le\frac{\tan x}{\sin x}=\frac{\frac{\sin x}{\cos x}\left(\frac{1}{\sin x}\right)}{\sin x\left(\frac{1}{\sin x}\right)}$

$1\le\frac{x}{\sin x}\le\frac{1}{\cos x}$

$2(a+b)=2a+2b$

~~$2(ab)=2a2b$~~

$2(ab)=2\cdot a\cdot b$

$a\cdot 2\cdot b$

$a\cdot b\cdot 2$

$1\ge\frac{\sin x}{x}\ge\cos x$

$\cos x\le\frac{\sin x}{x}\le 1$

$\lim_{x\to 0}\cos x\le\lim_{x\to 0}\frac{\sin x}{x}\le\lim_{x\to 0}1$

$1\le\lim_{x\to 0}\frac{\sin x}{x}\le 1$

If $\frac{1}{a}<\frac{1}{b}$ then $a>b$.

2.5 and 2.6

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Learn to

Think Deeply

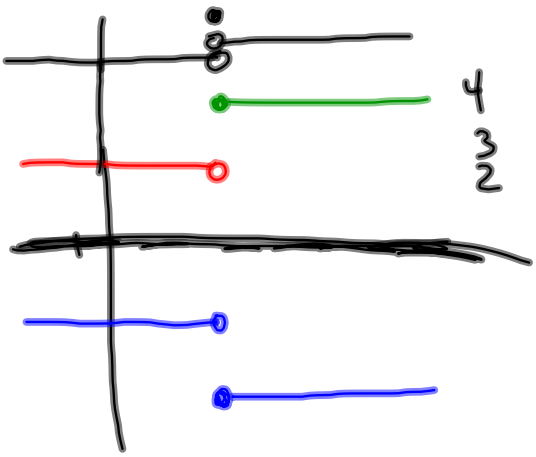
It takes so little to be above average.

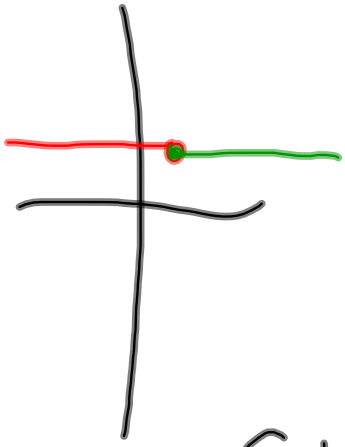
1) Avoid idiots at all cost.

2) The world is chock bloody full of idiots.

2.5 and 2.6 f and g are Not continuous at x=c 2014-09-23 day 20

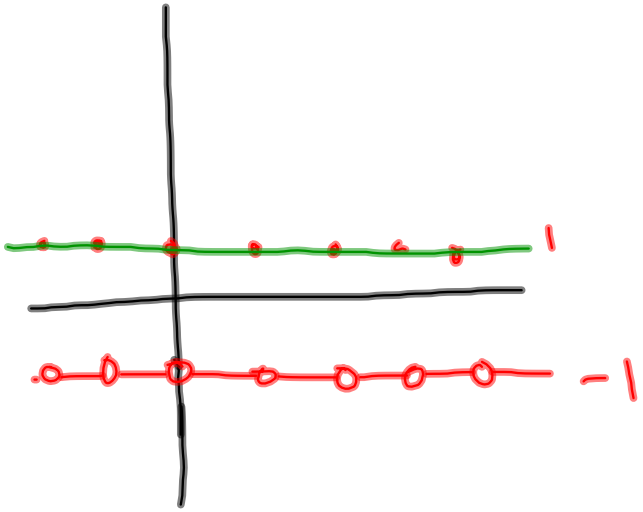
35) a) f+g can be either continuous, or not, at c





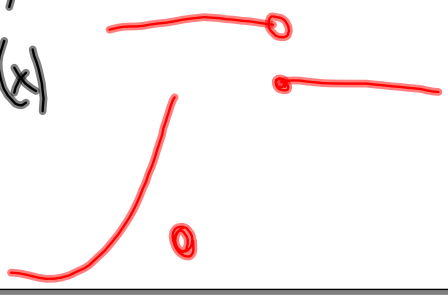
holes
jumps
infinite

b) fg can be cont or not. $f=g=\begin{cases}1, & \text{if } x \text{ is an integer}\\ -1, & \text{otherwise}\end{cases}$



A discontinuity is removable if I can define (or redefine) the value of the f^n at A SINGLE x-value, and the result is continuous

f(g(x)) o fog(x)



2.5 and 2.6

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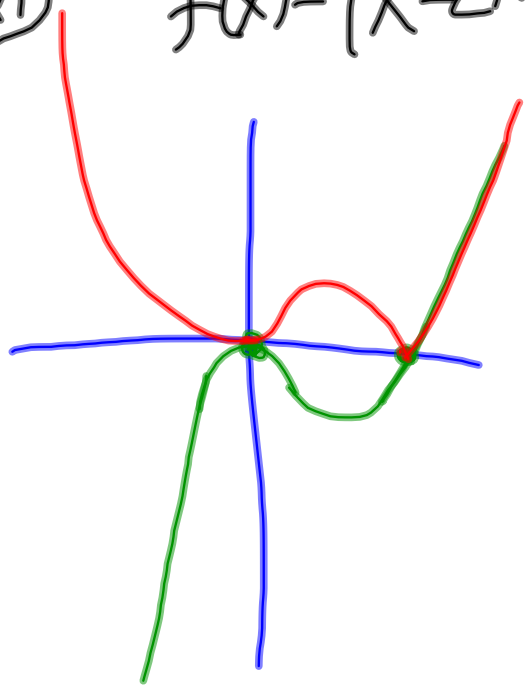
21) $f(x) = |x^3 - 2x^2|$

a cont. f^n composed w/ a cont fn is continuous

$x^3 - 2x^2 = x^2(x-2)$



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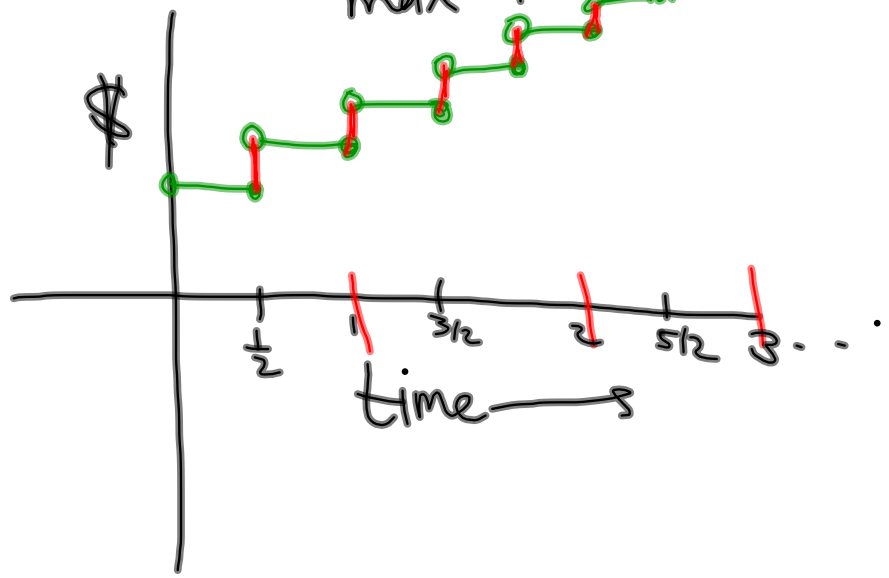
11) Parking $2 for first $\frac{1}{2}$ h.
$1 for subsequent $\frac{1}{2}$ h
max $10.



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26) $f(x)=\frac{1}{\sqrt{x-2}}$; domain $\{x>2\}$

domain of $\sqrt{x-2}$ is all x for which

$x-2\geq 0$

$x\geq 2$

2.5 and 2.6

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33) prove that $x^{3/5}$ is continuous everywhere.

Let a be any real number.

1) claim: $a^{3/5}$ is defined.
domain of exp. fnc is everywhere.

2) claim: $\lim_{x \to a} x^{3/5}$ exists.

$= (\lim_{x \to a} x)^{3/5} = a^{3/5}$ which exists

3) $x^{3/5}\Big|_{x=a} = a^{3/5} = \lim_{x \to a} x^{3/5}$